

ing the enlarged median pit on the pronotum, in having 5 (rather than 4) striae medial to the marginal stria, and in having coarse punctures on the last abdominal sternum.

REFERENCES

- Arrow, G. J. 1942. The beetle family Rhysodidae, with some new species and a key to those at present known. Proc. Roy. Entomol. Soc. London (B). 11: 171-83.
- Bell, R. T. 1970. The Rhysodini of North America, Central America, and the West Indies (Coleoptera: Carabidae or Rhysodidae). Misc. Publ. Entomol. Soc. Amer. 6:289-324.
- Chevrolat, L. A. 1873. Descriptions de quelques espèces de rhysodides. Ann. Soc. Entomol. France. (5) 3:387-388.
- Grouvelle, A. H. 1903. Synopsis des rhysodides et descriptions d'espèces nouvelles. Rev. Entomol. Caen. 22:85-148.

THREE TRYPHONINE ICHNEUMONIDS FROM CRETACEOUS AMBER (HYMENOPTERA)

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ABSTRACT—The genera *Catachora*, *Urotryphon*, and *Eubaeus* are described from amber believed to be 80 to 90 million years old, collected on the Taimyr Peninsula, Siberia. These 3 genera are believed to be related to *Grypocentrus* and *Idiogramma*.

Fossil ichneumonids in 4 small pieces of amber have been received for study from the Paleontological Institute, Moscow, through Dr. A. Rasnitsyn. According to Dr. Rasnitsyn, their age is Cretaceous, Coniacian-Santonian, 80 to 90 million years old. They were collected in 1971 at Yantardakh Hill, East Taimyr Peninsula, 3 km up from the mouth of the Maimetcha River, which is a branch of the Kheta River. The Kheta River, in turn, is a branch of the Khatanga River.

The 4 specimens in amber represent 3 species in 3 genera. All 3 are small, stout-bodied ichneumonids with the propodeum areolated and the first tergum short and wide, with the spiracle in front of its middle and, at least in 2 of the genera, with the median dorsal carinae reaching about 0.75 the length of the tergum. The one female specimen has an ovipositor of moderate length with a distinct nodus and no subapical notch. The apex of the front tibia of all specimens is

rounded on the outer side, without a projecting tooth. All specimens are very small, with the front wings 1.15 to 1.9 mm long. These sizes are at and below the lower size range of modern ichneumonids. Correlated with the small size, their antennae have few segments (13 to 15 segments), the stigma is large, radial cell short and deep, first brachial cell short, and discoidella weak or absent.

In general, these 3 Cretaceous genera resemble small stout bodied ichneumonids of several subfamilies, such as *Grypocentrus* and *Idiogramma* (Tryphoninae), *Adelognathus* (Adelognathinae), *Lysibia* and *Gnypetomorpha* (Gelinae), *Lathrolestes* (Scolobatinae), and *Earobia* and *Pygmaeolus* (Phrudinae). The true relationships of the 3 must be decided by using the small inconspicuous characters considered fundamental to the above subfamilies rather than general resemblances. All 3 have the spiracles of the first tergum in front of the middle. This rules out the possibility that they belong to the Adelognathinae or the Gelinae. The ovipositor of the single female is of the type used for external parasitism, with a distinct pre-apical nodus. This indicates relationships with the Tryphoninae or Gelinae. There is no tooth at the apex of the front tibia. This rules out placing them in the Scolobatinae. It therefore seems safe to assume that all 3 of the Cretaceous genera belong in the Tryphoninae. Among the living genera of Tryphoninae they show the greatest resemblance to *Grypocentrus* and *Idiogramma*. Probably they are part of a large complex of tryphonine genera, mostly extinct, which remain unknown except for these 3 fossils and a few genera surviving in the Holarctic Region.

As for their tribal placements, this is somewhat arbitrary, partly because all details of the specimens can not be seen, partly because only one of the specimens is a female, and partly because the classification of even the modern genera may be arbitrary. To assign them somewhere in the classification, however, I am referring *Catachora* and *Eubaeus* to the Tryphonini and *Urotryphon* to the Idiogrammatini. All 3 have the portion of the metacarpus distad of the radius unusually long. This could be a basis for placing all 3 in a new tribe, but such a classification does not seem necessary on the present evidence.

It is almost certain that these 3 Cretaceous genera were parasitic on sawflies, probably on xyelids. The modern genera most similar to them are *Grypocentrus*, which parasitizes leaf-mining sawflies (*Fenusa*), and *Idiogramma*, which attacks *Xyela* larvae in the staminate cones of *Pinus*. Since Xyelidae were relatively abundant in the Cretaceous, these are the most likely hosts. Larvae of modern xyelids tend to feed in buds or strobili. Their ancestors probably did the same.

The very small size of these specimens (front wing 1.15 to 1.9 mm

long) is intriguing. Very few of the living ichneumonids have a front wing measurement below 2.0 mm. The smallest (dwarfed) specimens on record belong in the genera *Stenomacrus* and *Diaglyptidea*, with a wing length of 1.7 mm and there is a species of *Aneuclis* with the front wing 1.6 mm. A number of other genera have dwarfed individuals with a wing length as short as 1.8 mm. The average wing length of the fossils (1.62 mm) is so low that there has to be a special reason for it. Obviously, the hosts themselves had to be exceptionally small insects, as ichneumonids are nearly all solitary parasites which are only a little smaller than their hosts. The sawfly hosts of that period must have been smaller than any sawflies now living, and to have been so small they must have had unusually small feeding niches. They were either leaf miners or fed in very small buds or strobili, or in small flower parts or seeds.

The 4 fossil specimens are described below. All are from the locality mentioned in the opening paragraph and the specimens can be found in the Paleontological Institute in Moscow. The amber pieces are not numbered but the specimens can be recognized individually from the drawings and descriptions.

Catachora, Townes new genus

fig. 1A

Front wing 1.8 mm long. Structure as figured. On the propodeum, the areola is hexagonal and slightly longer than wide. The sculpture of the thorax and abdomen is not clearly visible. What can be seen is that the punctures are moderately small and not dense.

This genus appears to be related to *Grypocentrus*. It differs in the very deep radial cell, differently shaped areolet, and very short first brachial cell. No female is at hand but it is presumed that the ovipositor would not be of the specialized shape found in *Grypocentrus*.

The genera name is from κατά (downward), plus χώρα (space), referring to the downward projecting radial cell.

Genotype: *Catachora minor*, new species.

Catachora minor Townes, new species

fig. 1A

Structure as figured, and as described under the generic heading.

Type: ♂, in Cretaceous amber, collected on the Taimyr Peninsula, Siberia (Paleontological Institute, Moscow).

Fig. 1. A. *Catachora minor*, side view of type male and front view of head. B. *Urotryphon pusillus*, side view of type male and abdomen of paratype female.

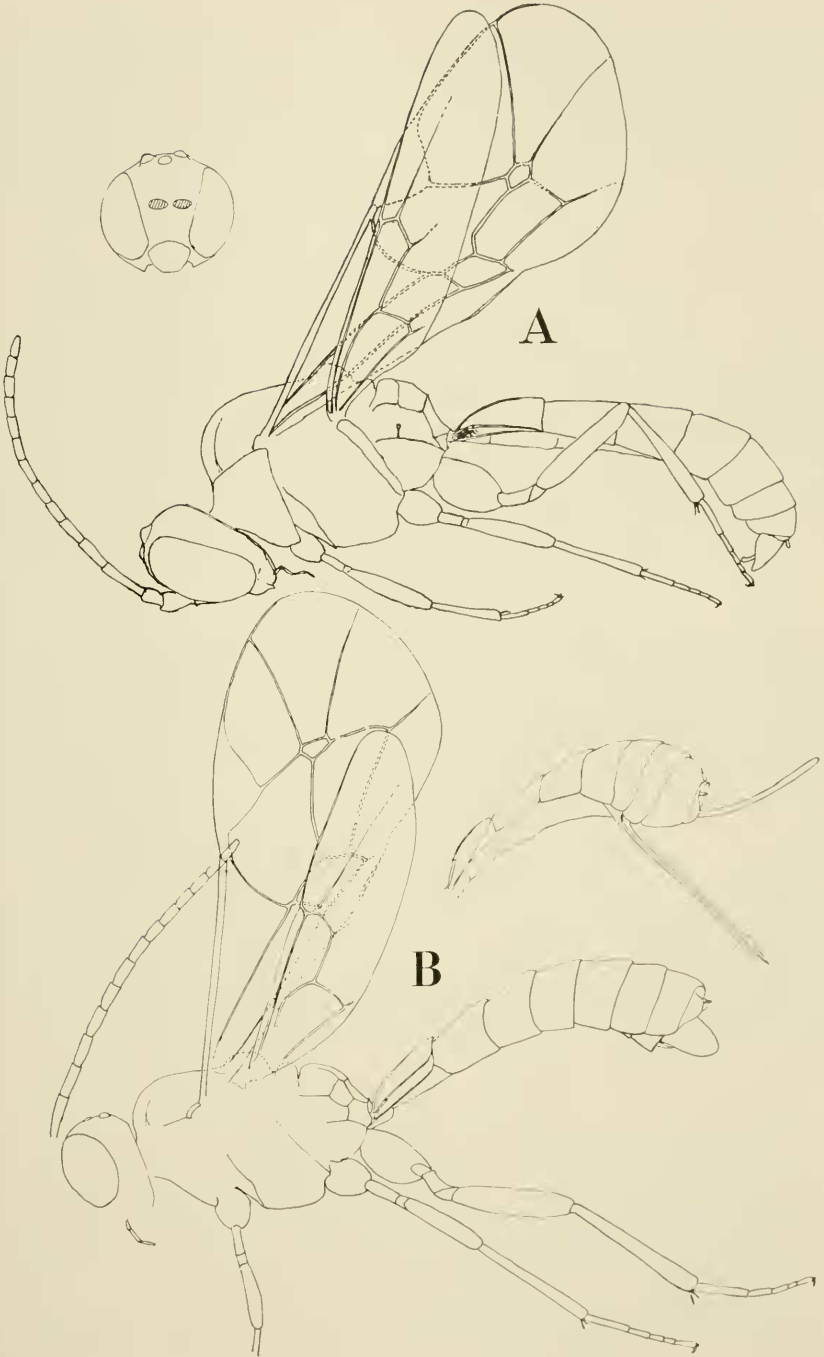




Fig. 2. *Eubaeus leiponeura*, side view of the unique specimen.

Urotryphon Townes, new genus

fig. 1B

Front wing 1.9 mm long. Structure as figured. On the propodeum, the areola and basal area are confluent. The occipital carina is apparently absent. The sculpture of the thorax and the abdomen is not clearly visible. What can be seen is that the punctures are moderately small and not dense. The front and lower parts of the head are lacking.

This genus seems to be related to *Idiogramma*. Points of resemblance are the relatively large head with eye relatively small, the

venation, apparent lack of creases to separate the abdominal epipleura, and the long ovipositor. It differs from *Idiogramma* in the lack of a discoidella and in the nearly complete areolation of the propodeum.

The generic name is from *οὔρα* (tail) plus *Tryphon*, alluding to the long ovipositor.

Genotype: *Urotryphon pusillus*, new species.

Urotryphon pusillus Townes, new species

fig. 1B

Structure as figured, and as described under the generic heading.

Types: ♂ and ♀, from Cretaceous amber, collected on the Taimyr Peninsula, Siberia (Paleontological Institute, Moscow). The holotype male is figured. It lacks the front and lower part of the head. The paratype female, of which the abdomen is figured, consists of the abdomen, propodeum, middle and hind legs, and an indistinct piece of the front wing showing the nervellus and its juncture with the discoideus.

Eubacus Townes, new genus

fig. 2

Front wing 1.15 mm long. Structure as figured. Front wing broad and hind wing very narrow. The venation on the only specimen available is very difficult to see. Dr. A. Rasnitsyn has sent enlarged photographs of the venation. The venation shown in the photographs, together with what I could see is represented in the drawing. In the hind wing, the mediellan and submediellan cells seem to be very small but these can not be seen distinctly. Only one spur was seen on the middle tibia, but there might be 2.

The absence of the second recurrent vein is a feature of several other very small ichneumonids as well as of *Eubaeus*, and is correlated with small size rather than with phyletic connections. Other ichneumonids that lack the second recurrent vein are *Gnypetomorpha*, *Neorhacodes*, *Polyauon stiavnicensis*, *Sathropterus* (usually), *Mesochorus obliterator*, and *Ophionellus*. Except for the last 2, these are very small species.

The generic name is from *εἰς* (very), plus *βαίος* (small).

Genotype: *Eubaeus leiponeura*, new species.

Eubaeus leiponeura Townes, new species

Structures as figured, and as described under the generic heading.

Type: ♂, in Cretaceous amber, collected on the Taimyr Peninsula, Siberia (Paleontological Institute, Moscow).